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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/973,871	10/11/2001	Fred A. Bunn	1875.0640001	7047

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EXAMINER
LIN, KENNY S

ART UNIT	PAPER NUMBER
2152	

DATE MAILED: 09/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/973,871	BUNN ET AL.
	Examiner	Art Unit	
	Kenny Lin	2152	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>25 July 2006</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-24</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-24</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>7/25/2006</u>.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

1.   Claims 1-24 are presented for examination.

Continued Examination Under 37 CFR 1.114

2.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on 7/25/2006 has been entered.

Information Disclosure Statement

3.   The IDS submitted on 7/25/2006 is considered.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

5.   Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman,

US 6,901,049, in view of Birdwell et al (hereinafter Birdwell), US 6,032,197.

6.   Chapman was cited in the previous office action. Birdwell was cited by the applicant in

IDS submitted on July 3, 2002.

7.   As per claims 1 and 13, Chapman taught the invention substantially as claimed including

a method/control logic for optimizing the transmission of TCP/IP traffic between a cable modem

and a cable modem termination system in a DOCSIS network (col.3, lines 55-63), comprising

the steps of:

      a. Determining whether the CMTS supports dynamic delta encoding header

         suppression protocol (col.5, lines 43-67, col.6, lines 1-7); and

      b. Responsive to a determination that the CMTS does support the dynamic delta

         encoding header suppression protocol (col.6, lines 1-5), performing operations

         including

            i. Transmitting fields in protocol headers of protocol packets from the cable

              modem (col.4, lines 35-67, col.5, lines 1-13, col.6, lines 8-32);

           ii. Suppressing redundant fields in protocol headers of subsequent protocol

              packets (col.4, lines 35-67, col.5, lines 1-13, col.6, lines 8-32).

8.   Chapman did not specifically teach the suppression in detail to transmit fields in a first

protocol header of a first TCP protocol packet from the cable modem; suppress redundant fields

in a second protocol header of a subsequent TCP protocol packet; and transmit a delta-encoded

value for each non-redundant field in said second protocol header of said subsequent TCP

protocol packet, wherein said delta-encoded values represents a change in value from a

respective non-redundant field in said first protocol header of said first TCP protocol packet.

Birdwell taught a suppressing method for optimizing the transmission of TCP/IP traffic to

transmit fields in a first protocol header of a first TCP protocol packet (col.1, lines 26-58, col.2,

lines 19-36, col.4, lines 42-50, fig.4) from the cable modem; suppress redundant fields in a

second protocol header of a subsequent TCP protocol packet (col.1, lines 26-58, col.2, lines 19-

32, 48-56, col.4, lines 19-26, 42-50, col.5, lines 11-52); and transmit a delta-encoded value for

each non-redundant field in said second protocol header of said subsequent TCP protocol packet,

wherein said delta-encoded values represents a change in value from a respective non-redundant

field in said first protocol header of said first TCP protocol packet (col.1, lines 26-58, col.2, lines

19-32, 48-56, col.6, lines 1-9). It would have been obvious to one of ordinary skill in the art at

the time the invention was made to combine the teachings of Chapman and Birdwell because

Birdwell's teaching of suppressing headers enables Chapman's method of header suppression to

remove the non-changing header fields prior to transferring to improve transmission efficiency

(see Birdwell, col.1, lines 30-38, col.2, lines 54-60).

9.   As per claims 2 and 14, Chapman and Birdwell taught the invention substantially as

claimed in claims 1 and 13. Birdwell further taught that step i) further comprises the step of

transmitting said first TCP protocol packet with an indicator, wherein said indicator indicates

that said first TCP protocol packet is to be learned (col.2, lines 48-67, col.3, lines 1-27, col.5,

lines 53-67, col.6, lines 1-20; e.g. flag).

10.   As per claims 3 and 15, Chapman and Birdwell taught the invention substantially as

claimed in claims 1 and 13. Birdwell further taught that step i) further comprises the step of

transmitting said first TCP protocol packet in its entirety and transmitting said subsequent

protocol header in a compressed format (col.4, lines 21-25, col.5, lines 11-67, col.6, lines 1-9,

52-54).

11.   As per claims 4 and 16, Chapman and Birdwell taught the invention substantially as

claimed in claims 1 and 13. Birdwell further taught that said subsequent TCP protocol packet

includes a bitmapped change byte, wherein bits in said bitmapped change byte indicate at least

one non-redundant field in said second protocol header that has said delta encoded value (col.2,

lines 48-67, col.6, lines 1-20, col.7, lines 24-33).

12.   As per claims 5 and 17, Chapman and Birdwell taught the invention substantially as

claimed in claims 4 and 16. Birdwell further taught to comprise the steps of:

     a. Enabling a receiver to learn said first TCP protocol packet (col.1, lines 26-58,

        col.2, lines 19-36, 48-67, col.3, lines 1-27, col.4, lines 42-50, fig.4),

     b. Enabling a receiver to restore said suppressed redundant field in said second

        protocol header of said subsequent TCP protocol packet using said first TCP

        protocol packet (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.4, lines 19-26,

        42-50, col.5, lines 11-52, col.6, lines 21-31),

     c. Enabling a receiver to restore said non-redundant field in said second protocol

        header of said subsequent TCP protocol packet using said respective delta-

encoded value (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.4, lines 19-26, 42-50, col.5, lines 11-52, col.6, lines 1-20), and

d. Enabling a receiver to provide said restored second protocol header in front of corresponding received data for transmission over an Internet Protocol network (col.1, lines 26-58, col.4, lines 34-67 and col.5, lines 1-19, col.8, lines 15-29; fig. 7).

13.   As per claims 6 and 18, Chapman and Birdwell taught the invention substantially as claimed in claims 5 and 17. Birdwell further taught to comprise the steps of:

a. Enabling a receiver to read said bitmapped change byte (col.5, lines 66-67, col.6, lines 1-20, col.7, lines 24-33),

b. Enabling a receiver to retrieve said delta encoded value using said bitmapped change byte (col.5, lines 66-67, col.6, lines 1-20, col.7, lines 24-33),

c. Enabling a receiver to update said respective non-redundant field in said second protocol header using said delta-encoded value (col.7, lines 38-52, col.8, lines 30-44), and

d. Enabling a receiver to restore said second protocol header to its original format (col.7, lines 15-19, 38-52, 54-67, col.8, lines 1-29).

14.   As per claims 7 and 19, Chapman and Birdwell taught the invention substantially as claimed in claims 1 and 13. Birdwell further taught to comprise the step of providing said restored second protocol header in front of corresponding received data for transmission over an

Internet Protocol network (col.1, lines 26-58, col.4, lines 34-67 and col.5, lines 1-19, col.8, lines 15-29; fig.7).

15.   As per claims 8 and 20, Chapman taught the invention substantially as claimed including a method/control logic for receiving packets by a cable modem termination system from a cable modem in a DOCSIS network (col.3, lines 55-63), comprising the steps of:

a. Receiving a message from the cable modem indicating support for a dynamic delta encoding header suppression protocol (col.5, lines 43-67, col.6, lines 1-7); and

b. Responsive to receiving the message, performing operations including (col.6, lines 1-5)

    i. Receiving fields in a protocol header of protocol packets from the cable modem (col.4, lines 35-67, col.5, lines 1-13, col.6, lines 8-32);

    ii. Receiving an indication that a redundant field in protocol headers of subsequent protocol packets is suppressed (col.4, lines 35-67, col.5, lines 1-13, col.6, lines 8-32).

16.   Chapman did not specifically teach the suppression in detail to receive fields in a protocol header of a first TCP protocol packet from the cable modem; receive an indication that a redundant field in a second protocol header of a subsequent TCP protocol packet is suppressed; and receive a delta-encoded values for each non-redundant field in said second protocol header of said subsequent TCP protocol packet, wherein said delta-encoded value represents a change in

value from a respective non-redundant field in said first protocol header of said first TCP

protocol packet. Birdwell taught a suppressing method for optimizing the transmission of

TCP/IP traffic to receive fields in a protocol header of a first TCP protocol packet from the cable

modem (col.1, lines 26-58, col.2, lines 19-36, col.4, lines 42-50, fig.4); receive an indication that

a redundant field in a second protocol header of a subsequent TCP protocol packet is suppressed

(col.1, lines 26-58, col.2, lines 19-32, 48-56, col.4, lines 19-26, 42-50, col.5, lines 11-52); and

receive a delta-encoded values for each non-redundant field in said second protocol header of

said subsequent TCP protocol packet, wherein said delta-encoded value represents a change in

value from a respective non-redundant field in said first protocol header of said first TCP

protocol packet (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.6, lines 1-9). It would have

been obvious to one of ordinary skill in the art at the time the invention was made to combine the

teachings of Chapman and Birdwell because Birdwell's teaching of suppressing headers enables

Chapman's method of header suppression to remove the non-changing header fields prior to

transferring to improve transmission efficiency (see Birdwell, col.1, lines 30-38, col.2, lines 54-

60).

17.   As per claims 9 and 21, Chapman and Birdwell taught the invention substantially as

claimed in claims 8 and 20. Birdwell further taught that step i) further comprises the step of

receiving an indicator with said first TCP protocol packet, wherein said indicator indicates that

said first TCP protocol packet is to be learned (col.2, lines 48-67, col.3, lines 1-27, col.5, lines

53-67, col.6, lines 1-20; e.g. flag).

18.   As per claims 10 and 22, Chapman and Birdwell taught the invention substantially as

claimed in claims 8 and 20. Birdwell further taught that said subsequent TCP protocol packets

include a bitmapped change byte, wherein bits in said bitmapped change byte indicate at least

one non-redundant field in said second protocol header that has said delta encoded values (col.2,

lines 48-67, col.6, lines 1-20, col.7, lines 24-33).

19.   As per claims 11 and 23, Chapman and Birdwell taught the invention substantially as

claimed in claims 8 and 20. Birdwell further taught to comprise the steps of:

    a. Learning said first TCP protocol packet (col.1, lines 26-58, col.2, lines 19-36, 48-

        67, col.3, lines 1-27, col.4, lines 42-50, fig.4);

    b. Using learned information from said first TCP protocol packet to reconstruct said

        suppressed field in said second protocol header of said subsequent TCP protocol

        packet (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.4, lines 19-26, 42-50,

        col.5, lines 11-52, col.6, lines 1-31); and

    c. Using said first TCP protocol packet to reconstruct a non-redundant field in said

        second protocol header of said subsequent TCP protocol packet (col.1, lines 26-

        58, col.2, lines 19-32, 48-56, col.4, lines 19-26, 34-67 and col.5, lines 1-52, col.8,

        lines 15-29; fig. 7).

20.   As per claims 12 and 24, Chapman and Birdwell taught the invention substantially as

claimed in claims 11 and 23. Birdwell further taught to comprise the step of restoring said

subsequent TCP protocol packet to its original format and transmitting said subsequent TCP

protocol packet over an Internet Protocol network (col.1, lines 26-58, col.4, lines 34-67 and

col.5, lines 1-19, col.8, lines 15-29; fig.7).

Response to Arguments

21.   Applicant's arguments filed 7/25/2006 have been fully considered but they are not

persuasive.

22.   In the remark, applicant argued (1) Nothing in Birdwell teaches or suggests transmitting

or receiving a delta-encoded value for each non-redundant field.

23.   Examiner traverse the argument:

As to point (1), this argument was previously addressed in the advisory action mailed on

12/12/2005. No new argument is raised. In the advisory action, the examiner explained that:

> Birdwell taught in column 5, lines 59-67 and column 6, lines 1-9 to include compression
> bit value (e.g. delta-encoded value) for each compressed header (e.g. compressed header
> of the TCP protocol packet having no redundant field), wherein the compression bit value
> represents 0 or 1 to indicate whether the packet is full-length or reduced length (e.g.
> change in value from a respective non-redundant filed in said first protocol header of said
> first TCP protocol packet) since a reduced length data packet includes a compressed
> header having no redundant header fields. This reads on the claimed language.
> Applicant's citation of column 5, lines 20-25 and 31-37 to point out that the fields in
> Birdwell's compressed and uncompressed headers are identical is an incorrect statement
> since in column 5, lines 26-30 of Birdwell, where the applicant left out in the remark,
> specifically teach that the compressed header is a 32-bit header with both IP and UDP
> fields omitted. This showed that an uncompressed header includes additional fields.
> Figure 4 shows a full-length data packet with uncompressed header consist of the 224-bit
> IP and UDP headers and the 16-bit protocol block (see col.5, lines 53-58). Therefore, the
> uncompressed header and compressed header are not identical.

Since the applicant failed to response to the above examiner's explanation stated in the

12/12/2005 advisory action with disagreement or further arguments, the claims thus stand

rejected under Chapman and Birdwell.

Conclusion

24.   A shortened statutory period for reply to this Office action is set to expire THREE

MONTHS from the mailing date of this action.

25.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kenny Lin whose telephone number is (571) 272-3968. The

examiner can normally be reached on 8 AM to 5 PM Tue.-Fri. and every other Monday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Bunjob Jaroenchonwanit can be reached on (571) 272-3913. The fax phone number

for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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September 18, 2006